

MARINE DIVISION

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Certificate number: 19111/A1 EC

File number : NAV 02/24647/02

Annex A1 Item number : A.1/4.3

USCG Module B number : 165.103 / EC0062

*This certificate is not valid when presented without the full attached
schedule composed of 7 sections*

EC TYPE EXAMINATION CERTIFICATE

*as per Module B of European Union Council Directive 96/98/EC on marine equipment
as last amended by Commission Directive 2002/75/EC*

This certificate is issued to

IXSEA
MARLY LE ROI - FRANCE
for the type of product
GYRO COMPASS
HYDRINS III
Fiber-Optic Navigator

Regulations and standards :

SOLAS 74, as amended (last amendment). Regulations V/19.2.5.1 - IMO Resolutions A.424(XI), A.694 (17), IEC 60945(2002) - IEC 61162 - ISO 8728(1997).

This certificate is issued under the French Maritime Authority to attest that BUREAU VERITAS did undertake the relevant type-examination procedures for the product identified above which was found to comply with the relevant requirements of the Council Directive 96/98/EC of 20 December 1996 as amended

This certificate is valid until : 02 Mar 2012



At Neuilly, on : 23 Dec 2008

For BUREAU VERITAS, Notified Body N°0062
By order of the Secretary

Approval office

Local office : BV NANTES
Surveyor : J. Gaurin

L.COURREGELONGUE



This certificate does not allow to issue the Declaration of Conformity and to affix the mark of conformity (wheelmark) to the products corresponding to this type. To this end, the production-control phase module (D, E or F) of Annex B of the Directive is to be compiled with and controlled by a written inspection agreement with a notified body.

This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. BUREAU VERITAS S.A. is designated by the French Maritime Authority as a "notified body" under the terms of the French Regulations Division 140 Chapter 140-2. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine Division. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

HYDRINS III
Fiber-Optic Navigator (FON)
based on IXSEA Fiber-Optic Gyrocompass (FOG) technology

Technical Specifications:

1.1 - GENERAL

System which outputs heading, roll, pitch, heave, surge, sway, position, altitude, depth and velocity at high rate and high accuracy heading attitude. System is dedicated to marine and underwater applications.

1.2 - PERFORMANCES

- Gyro Compass & motion sensor Technical Performances

Heading accuracy ⁽¹⁾ (no aiding) :	< 0.05 ° Secant Latitude
Full accuracy settling time :	< 5 mn
Heave, surge and sway accuracy :	5 cm or 5% (whichever is highest)
Roll / Pitch dynamic accuracy ⁽¹⁾ :	0.01°
Heading / Roll / Pitch resolution	0.001°
Range :	± 180 deg for roll and pitch ; 360° heading
Time stamping accuracy :	< 100 µs
Jitter :	< 100 µs on Port A, < 500 µs on other ports
Fixed Latency :	3 ms on Heading, Roll, Pitch

(1) RMS values

1.3 - OPERATING RANGE/ENVIRONMENT

Operating / storage temperature :	-20°C to +55° / -40°C to + 80°C
Vibrations ⁽²⁾ :	sinus 0.5 g max, 5 to 40 Hz
Angular speed dynamic range :	up to 750°/s
Acceleration dynamic range :	+/- 15 g
MTBF :	30 000 hours

(2) IMO acceptance criteria

1.4 - INTERFACE

Serial RS232 or RS422 Port :	5 inputs / 5 outputs
Ethernet Port :	UDP / TCP Client / TCP Server
Pulse Port :	4 inputs / 2 outputs
Input / Output formats :	Industry standards: NMEA 0183, ASCII, Binary
Baud rates :	600 bauds to 115.2 kbauds
Data output rate :	0.1 Hz to 200 Hz
Power supply/consumption :	24V DC (20 to 32 V) / 15 W

Installation Software :

PHINS is delivered with a powerful and easy-to-use installation software, which allows a complete configuration (choice of baud rates and output data rates, data frame protocols, lever arms, filtering parameters,...)

1.5 - HOUSING

Shape:	Square box
Dimensions:	(L x W x H, in mm): 180 x 180 x 162
Weight:	4.5 kg
Material:	Aluminium
Mounting :	4 Ø 6.5 holes
Connectors :	Amphenol 451 series (Military grade)
Water proof:	IP 66

1.6 - SOFTWARE

- LoaderDSP4 V2.1
- FirmwareDSP4 V 10.26
- LoaderInterface V 3.4
- FirmwareInterface V 3.7
- IXRepeater V 7.2.1

2. DOCUMENTS AND DRAWINGS :

- In accordance with the manufacturer's drawings and documents:
- 2.1 - M/RE/HYDRINS/001- Ed.A dated 24/10/2006 - Schedule of approval
- 2.2 - M/RT/IMO/002- Ed.A dated 24/10/2006 - Bill of Material
- 2.3 - MU-PHINSIII-002-A General Intro (index Part 1 to 6 + quick start guide), July 2008
- 2.4 - M/RE/HYDRINS III/003 Ed. A dated 23/11/2007- Design modification.
- 2.5 - M/RT/IMO/004 Ed. A dated 20/03/2008 - HYDRINS III Bill of Material
- 2.6 - Shipborne Software development document - M/RE/IMO/001

3. TEST REPORTS :

- 3.1 - Test report N° M/RT/HYDRINS/001-A issued by IXSEA on 15/12/06.
Certificate of recognition of a test laboratory N° SMS.L.I.CE/24647/A.0.
- 3.2 - Test report M/PI/IMO/002-A issued by IXSEA on 20/11/06.
The test had been witnessed by a Society's Surveyor
- 3.3 - Test report N° RC-06-45477-1-XH/AJ issued by EMITECH on 13/11/06.
- 3.4 - Test report N° RQ-06-60936-1 issued by EMITECH on 10/08/06.
- 3.5 - Test report N° EKL08798-1 issued by SOPEMEA on 14/09/2006.
- 3.6 - Test report N° EKL-08771-2 issued by SOPEMEA on 14/09/06
- 3.7 - Test report N° M/RT/HYDRINSIII/008-A issued by IXSEA on 04/04/2008.
- 3.8 - Test report N° RC-032-C45-07-1046-44-1-PT-BB issued by EMITECH on 25/10/2007.
- 3.9 - Test report N° R022-QUM-07-105609 Ed1 issued by EMITECH on 24/04/2008.

4. APPLICATION / LIMITATION :

- 4.1 - IBM PC compatible computer used as "Repeater Software" according to IEC 60945 or IEC 60092-504.
- 4.2 - In order to comply with SOLAS Regulations V/19 intended for Ships of 1600 gross tonnage and upwards, the Gyro-compass HYDRINS III should be fitted with Gyro interface and Bearing repeater type approved by the Society.
- 4.3 - Only Hardware and Software successfully tested together in compliance with the regulations as referred to in page one, according to the declaration of the manufacturer are covered by this certificate.

5. PRODUCTION SURVEY REQUIREMENTS :

This certificate does not allow the applicant to issue the Declaration of Conformity and to affix the mark of conformity (wheelmark) to the products corresponding to this type. To this end, the production-control phase module D "Production Quality Assurance" or E "Product Quality Assurance" or F "Product Verification" of Annex B of the Directive is to be complied with and controlled by a written inspection agreement with a Notified Body.

6. MARKING OF PRODUCT :

6.1 - Maker's name or trade mark,

- Serial number of the units,

- Equipment type number or model identification under which it was type-tested,

6.2 - Markings as per MED 96/98/EC when authorized by a Notified Body :

☐ YYYY/XX where YYYY is the number of the Notified Body undertaking surveillance module (when BV, 0062) and where XX are the last two digits of year mark affixed.

6.3 - In pursuance of the EU/US MRA+, and in accordance with the Council Decision 2004/425/EC of 21 April 2004, the manufactured item(s) can be affixed with the USCG conformity marking, subject to the authorization of the Conformity Assessment Body undertaking surveillance module.

6.4 - Alternatively, the marking may be presented on a display at equipment start-up.

6.5 - The title and version of each software element included in the installed software system shall be either marked or displayed on command on the equipment.

6.6 - When the marking and the title and version of the software are displayed only on the display, such information shall also be included in the equipment manual.

7. OTHERS :

7.1 - This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the **GYRO COMPASSES (FON)** at any time, and that **iXSea, Marly-le-Roi - FRANCE**, will accept the responsibility for informing shipbuilders or their sub-contractors of the proper methods of use and general maintenance of **GYRO COMPASSES (FON)** and the conditions of this approval.

7.2- This certificate cancels and replaces the previous one issued by the Society on 02/03/2007, under ref. N° 19111/A0 B.

*** END OF CERTIFICATE ***